

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND INTERFERENCES**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of	)	
	)	
ATHANASSIOS TZIKAS,	)	
GEORG ROENTGEN and	)	
HERBERT KLIER	)	
	)	
Serial No. 10/544,165	)	Group Art Unit: 1796
	)	
Filed July 29, 2005	)	Examiner: Amina Khan
	)	
MIXTURES OF REACTIVE DYES	)	
AND THEIR USE	)	
	)	

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPELLANT'S BRIEF**

Sir:

The following brief is on appeal of a final rejection of Claims 8, 11 and 13 of the above-identified U.S. patent application. The rejection was contained in an Office Action mailed on September 29, 2010 and a Notice of Appeal was filed on January 27, 2011. It is respectfully submitted that the Board consider the following arguments and reverse the rejection of Claims 8, 11 and 13 in the above-identified application.

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**Real Party of Interest:**

The invention of the present application is assigned to Huntsman International LLC, which is the real party of interest in the present appeal.

**Related Appeals and Interferences:**

Appellant, and appellant's legal representative, are not aware of any appeals or interferences that directly affect or could be directly affected by or have a bearing on the Board's decision in the present appeal.

**Status of the Claims:**

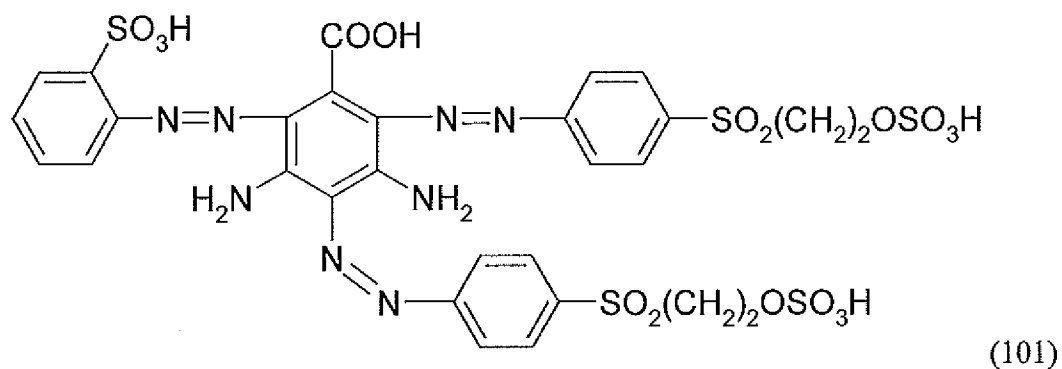
Claims 1-13 were presented for examination. Claims 1-7, 9-10 and 12 were cancelled. Claims 8, 11 and 13 are pending and are the subject of the present appeal and stand rejected by the Examiner.

**Status of Amendments:**

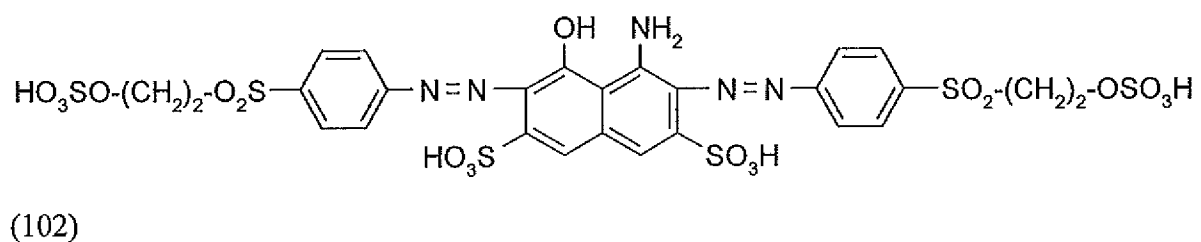
All amendments were entered prior to the final rejection. No amendments were filed after the mailing of the Office Action.

**Summary of Claimed Subject Matter:**

There is one independent claim on appeal, claim 13. Independent claim 13 is directed to a dye mixture comprising a reactive dye of the formula



together with a reactive dye of the formula



in a ratio of from 10:90 to 90:10 (*Application text*, pg. 2, ll. 1-9, pg. 17, ll. 14-15, pg. 22, l. 22 and pg. 23, l. 1).

**Grounds of Rejection to be Reviewed on Appeal**

1. Claims 8, 11 and 13 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over US 6,160,101 (hereinafter "Tzikas et al. I") in view of WO 00/06652 (hereinafter "Tzikas et al. II").



**Argument:****1. Appellant's dye mixture is not rendered unpatentable by Tzikas et al. I in view of Tzikas et al. II.**

Claims 8, 11 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tzikas et al. I in view of Tzikas et al. II. Appellant respectfully traverses this rejection for the following reasons.

The United States Supreme Court has recently addressed the issue of obviousness by stating the *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 86 S. Ct. 684 (1966) factors still control an obviousness inquiry. See *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007). Those factors are: 1) "the scope and content of the prior art"; 2) the "differences between the prior art and the claims"; 3) "the level of ordinary skill in the art"; and 4) objective evidence of nonobviousness. *KSR*, 127 S. Ct. at 1734 (quoting *Graham* 383 U.S. at 17-18). Further, the "combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 1739. Finally, obviousness can be rebutted by secondary considerations, such as a showing of new and unexpected results relative to the prior art. See *Iron Grip Barbell Co. Inc. v USA Sports Inc.*, 392 F.3d 1317, 1322 (Fed. Cir. 2004). To establish unexpected results, the claimed subject matter must be compared with the closest prior art and the unexpected results must also be commensurate in scope with the degree of protection sought by the claimed subject matter. See *In re Baxter Travenol Labs*, 952 F.2d 388, 392 (Fed. Cir. 1991); *In re Harris*, 409 F. 3d 1339, 1344 (Fed. Cir. 2005).

While it is true Tzikas et al. I teach the compound of formula (101) and Tzikas et al. II teach the compound of formula (102), neither publication teaches or suggests a dye

mixture containing the dyes of formulae (101) and (102) in a ratio of from 10:90 to 90:10 as presently claimed. The Examiner urges that since compositions containing the dye of formula (101) and the dye of formula (102) are individually taught, it would be *prima facie* obvious to combine the two compositions to form a third composition containing a mixture of these dyes. However, Appellant's respectfully submit the Examiner is applying an improper "obvious to try" rationale in support of this obviousness rejection.

As one skilled in the textile arts is aware, the compatibility of known dyes in a dye mixture cannot simply be predicted based solely on knowledge of their individual properties. Thus, while Tzikas et al. I teaches the dye formula (101) and Tzikas et al. II teaches the dye of formula (102), it cannot simply be predicted that the combination of these two specific dye compounds would or could yield a dye mixture having known (i.e. superior or inferior) properties. As support for combining these dyes in a mixture, the Examiner points to the passage in Tzikas et al. I which states that its dyes can be obtained as mixtures (*see U.S. 6,160,101*, col. 24, ll. 36-42). However, this passage relates to mixtures of different isomers which occur during the synthesis of the dye. There is no teaching or suggestion in either Tzikas et al. I or II that would provide one of ordinary skill any reasonable expectation that a dye mixture containing the specific dyes of formula (101) and formula (102) in a ratio of 10:90 to 90:10 would or even could provide dyeings having a high degree of fixing, high tinctorial strength, a high fibre-dye binding stability in both the acidic and alkaline range, and good all-around fastness to light and wetness (*see Application text*, page 18, l. 26 to page 19, l. 8). Instead, one skilled in the art would have been faced with combining an infinite number of individual dyes that are taught in these publications to determine which combination was compatible and highly

effective (or ineffective). Therefore, because neither Tzikas et al. I or Tzikas et al. II teaches or suggests the presently claimed combination at the claimed ratio, Appellant's claimed mixture is not rendered obvious by these publications.

Assuming *arguendo* that Appellant's claimed mixture is rendered obvious by Tzikas et al. I and II, Appellant's have rebutted this obviousness by the Declaration of Roentgen attached hereto as Appendix A. The Declaration of Roentgen provides comparative data for the claimed dye mixture against the closest dye mixture disclosed in Tzikas et al. I and Tzikas et al. II. In particular, the claimed dye mixture containing the dye of formula (101) and the dye of formula (102) was compared against the dye mixture taught in Example 124 of Tzikas et al. II containing the dye of formula (107) (similar to Appellant's dye of formula (102)) and a dye having the formula (106). The results clearly demonstrate that the replacement of the dye of formula (106) in Tzikas et al. II with Appellant's dye of formula (101) in a dye mixture leads to a substantial improvement in build-up properties of the dye mixture.

The Examiner asserts the data provided in the Declaration of Roentgen is not commensurate in scope with the claims. However, Appellant's respectfully submit the data provided in the Declaration of Roentgen is commensurate in scope with the claims since the claims have been narrowed to a dye mixture containing these two specific dye species at a defined ratio of 10:90 to 90:10. Appellant has provided data which shows the two dye species of formula (101) and (102), when combined, enables a dye mixture to exhibit superior performance. The superior performance was observed for a dye mixture containing the dyes of formula (101) and (102) at a ratio of 22:78. Furthermore, a dyeing having good fastness properties was also observed for a dye mixture containing these dye

species at a ratio of 15:85 (*see Application text*, p. 22, l. 20 to page 23, l. 6). One skilled in the art would have no reason to believe that a dye mixture containing the two dye species of formula (101) and (102) at other ratios within the range of 10:90 to 90:10 would also not provide similar superior results.

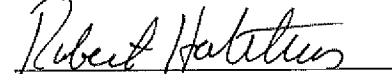
Therefore, on these facts, Appellant respectfully submits that the Declaration of Roentgen rebuts any *prima facie* case of obviousness of claim 13 based on Tzikas et al. I and Tzikas et al. II. Since claim 13 is believed to be allowable, it is respectfully submitted claims 8 and 11, which depend on claim 13, should also be allowable.

Withdrawal of the rejection is respectfully requested.

In conclusion, for the reasons set forth above, Appellant respectfully requests the Board overturn the Examiner's rejections. Should any fee be due in connection with the filing of this document, the Commissioner for Patents is hereby authorized to deduct said fee from Huntsman Corporation Deposit Account No. 08-3442.

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Respectfully Submitted,



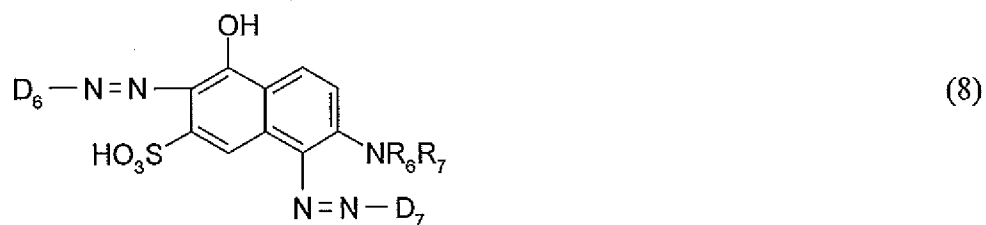
Robert Holthus  
Reg. No. 50,347  
Attorney for Appellant

Date: 5/13/11

## Claims Appendix:

Claims 1-7 (cancelled).

Claim 8. (previously presented): A dye mixture according to claim 13, which additionally comprises a dye of formula



wherein

R<sub>6</sub> and R<sub>7</sub> are each independently of the other hydrogen or C<sub>1</sub>-C<sub>4</sub> alkyl, and

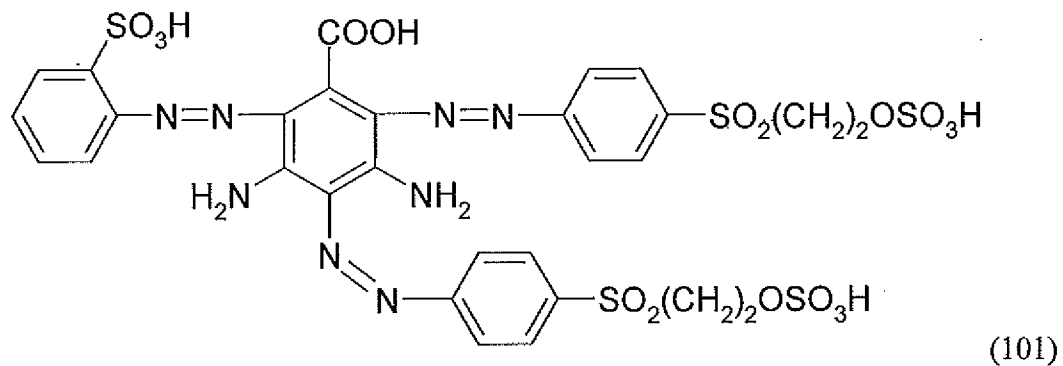
D<sub>6</sub> and D<sub>7</sub> are each independently of the other the radical of a diazo component of the benzene or naphthalene series.

Claims 9-10. (cancelled):

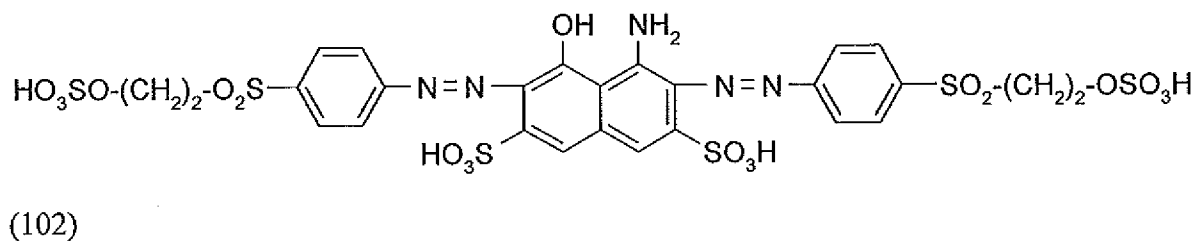
Claim 11. (previously presented): An aqueous ink comprising a dye mixture according to claim 13.

Claim 12 (cancelled).

Claim 13 (previously presented). A dye mixture comprising a reactive dye of the formula



together with a reactive dye of the formula



in a ratio of from 10:90 to 90:10.

**Evidence Appendix:**

Attached as Appendix A, Appellant submits the Declaration of Roentgen, which was entered into the record on June 7, 2010.



## Appendix A

Case 4-22830

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Athanassios Tzikas et al.

Serial No. 10/544,165

Filed July 29, 2005

For MIXTURE OF REACTIVE DYES AND THEIR USE

Group Art Unit: 1796

Examiner: A. Khan

### DECLARATION UNDER RULE 132

I, Georg ROENTGEN, a citizen of Germany, residing at Reutebachgasse 38, D-79108 Freiburg im Breisgau, hereby declare:

That I was awarded the degree of a Chemical Engineer of the Fachhochschule Aachen, (Germany), in 1990;

That I have been employed by Ciba Specialty Chemicals, Basel, as a research chemist since 1990 and by Huntsman Advanced Materials (Switzerland) GmbH since 2006 and presently hold the position of Head R&D Reactive Colors in the Division Textile Effects;

That I have been engaged in the field of dyestuffs for Ciba Specialty Chemicals since 1990 and for Huntsman Advanced Materials since 2006;

That based on the above education and experience, I consider myself an expert in the field of dyestuffs.

I, Georg ROENTGEN, declare that the preparation of dyestuff mixtures A and B as well as the following dyeings and tests were carried out under my direction and supervision;

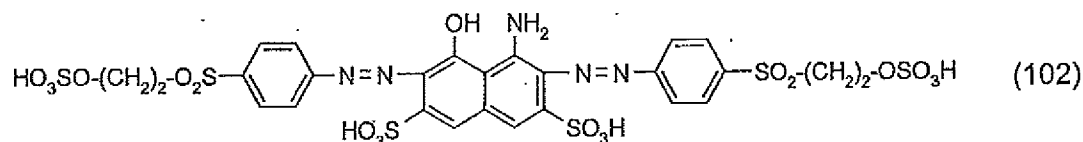
That I am submitting herewith the following exact report of the tests mentioned below:

# Determination of Build-up

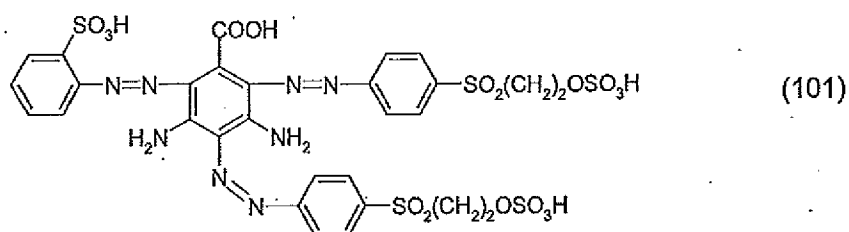
The following dye mixtures were prepared:

Mixture A according to the present application

78 % by weight of compound of formula (102)

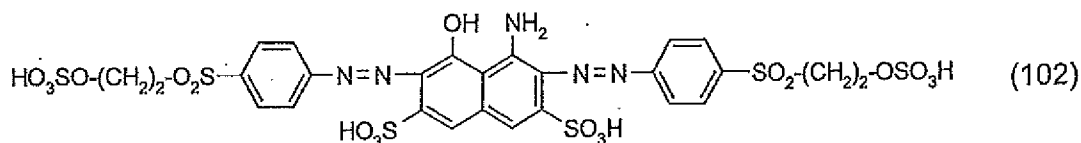


22 % by weight of compound of formula (101)

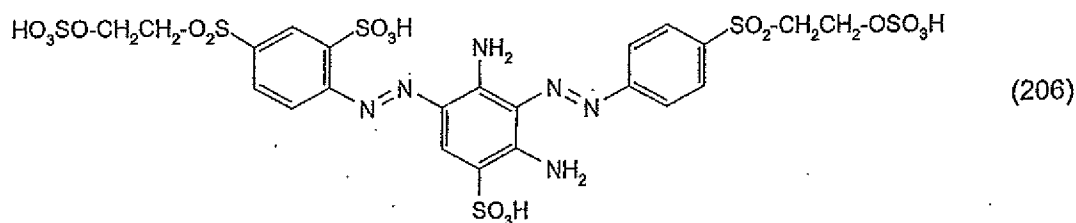


Mixture B according to Example 124 of WO 00/06652

78 % by weight of compound of formula (102)



22 % by weight of compound of formula (206)



### Determination of Build-up

As described in the present application, a bleached cotton fabric (tricot 1-4002/8) was dyed with Dye Mixtures A (invention) and B (prior art), respectively, according to the exhaust process (liquor ratio 1:10). To assess the build-up properties of the dyestuff mixtures, exhaust dyeings were made at dyestuff concentrations in the dye bath of 0.5, 1.0, 2.0, 4.0, 6.0 and 8.0 % by-weight of Dyestuff Mixtures A and B, respectively.

The colour strength of the dyeings was assessed by a commercial colorimetric equipment (Datacolor). The results are summarized in Table 1:

Table 1: Colour Strength in relation to Dye Concentration

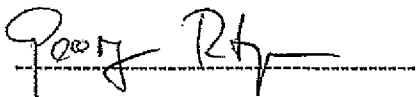
Concentration [%]	0.5	1.0	2.0	4.0	6.0	8.0
A (invention)	0.62	0.99	2.06	4.00	4.77	5.17
B (prior art)	0.50	0.91	1.83	3.60	4.46	4.90

I, Georg ROENTGEN, hereby declare:

1. That based on my education and experience, I consider myself an expert in the field of dyeing art and dyestuff preparation;
2. That the results of the above tests show that the new dyestuff mixture (A) is superior to the structurally closest dyestuff mixture B with respect to the property tested;
3. That build-up properties are an important feature for the textile industry and an improvement in this property is of considerable importance;
4. That the above given measurement of build-up properties demonstrates a significant improvement in this property which is of commercial importance;
5. That the results of the tests are surprising to me and I would not have predicted such difference in the property tested.

I, Georg ROENTGEN, declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 19 th day of May, 2010

A handwritten signature in dark ink, appearing to read 'Georg Roentgen', is written over a horizontal dashed line.

Georg ROENTGEN

**Related Proceeding Appendix:**

None